Appendix 2
Templates for Stressor Analyses

APPENDIX II

Human Health

Risk Assessment Framework	Findings
Hazard Identification	
stressor	
description of stressor (including etiology)	
stressor-specific impacts considered including key impacts	
Exposure Assessment	
exposure routes and pathways considered (include indoor air as appropriate)	
population(s)/ecosystem(s) exposed statewide	
quantification of exposure levels statewide, including populations at significantly increased exposure (include indoor air as separate category as appropriate)	
specific population(s) at increased risk	
quantification of exposure levels to population(s) at increased risk (i.e., susceptible sub-populations) (include indoor air as separate category as appropriate)	
Dose/Impact-Response Assessment	
quantitative dose/impact-assessment employed for each population considered	
Risk Characterization	
risk estimate(s) by population at risk including probability and number of cases/occurrences (specify risk metric employed , e.g., mean population risk upper percentile population risk, etc.)	
assessment of severity, persistence, irreversibility, frequency of effect(s) (categories as appropriate)	
size of population(s) affected	
assessment of uncertainties in this assessment (H,M,L) and brief description, and data gaps	
potential for additional data to result in a significant future change in this risk estimate (H,M,L) and brief description	
potential for future changes in the underlying risk from this stressor (+++, ++, +, 0, ?=,?where + is improvement)	
potential impact from catastrophic (low probability) events (H,M,L) and brief description of likelihood	

potential impact from catastrophic (low probability) events (H,M,L) and brief description of likelihood	
extent to which risks are currently reduced through in-place regulations and controls	
Relative Contributions of Sources to Risk (H,M,L)	
Allocation of stressor-specific risk to primary NJ sources	
large business/industry	
small business industry	
transportation	
residential	
agriculture	
recreation	
resource extraction	
government	
natural sources	
contaminated sites	
diffuse and non-NJ sources	
sediment	
soil	
non-local air sources (including deposition)	
biota sinks	

Severity of specified health effects at current levels of exposure (H,M,L) (also 1-5 with 1 being least severe)	Size of population at significant risk for each health effect (H,M,L) (also 1-5 with 1 being smallest)	Are there discrete communities at elevated risk? (Y,N) (also 1-5 with 1 being the lowest probability that there are discrete communities at elevated risk)	Overall risk ranking (as a function of severity and population effected integrating across health effect) (H,M,L) (also 1-5 with 1 being the lowest overall risk)

APPENDIX II

Ecological Template

Issue:
Author:
Version:

Hazard Identification	
Stressor	
Description of stressor	
Stressor-specific impacts considered: Biological integrity Biodiversity Habitat/ecosystem health Ecosystem function	
Key impacts selected (critical ecological effects)	
Exposure Assessment	
Exposure routes and pathways considered	
Population(s)/ecosystem(s) exposed statewide	
Quantification of exposure levels statewide	
Specific population(s) at increased risk	
Quantification of exposure levels to population(s) at increased risk	
Dose/Impact-Response Assessment	
Quantitative impact-assessment employed	
Risk Characterization	

Risk estimate(s) by population at risk		
Risk Score = (Severity/Irreversibility) x (Frequency) x (Magnitude)		**Score**

Assessment of severity/irreversibility
 	
5 - Lifeless ecosystems or fundamental change;
   Irreversible
4 - Serious damage:
      • many species threatened/endangered
      • major community change
      • extensive loss of habitats/species
   Long time for recovery
3 - Adverse affect on structure and function of system:
      • all habitats intact and functioning
      • population abundance and distributions reduced
   Short time for recovery
2 - Ecosystem exposed but structure and function hardly
   affected
1 - No detectable exposure		

Assessment of frequency of effect(s) (list definition for each category, e.g., rare = 1/decade) 5 - Often and increasing 4 - Often and continuing 3 – Occasional 2 – Rare 1 - Possible in the future 0 – Unlikely (or 0.1)		

Assessment of frequency of effect(s) (list definition for each category, e.g., rare = 1/decade) 5 - Often and increasing 4 - Often and continuing 3 – Occasional 2 – Rare 1 - Possible in the future 0 – Unlikely (or 0.1)		
Size of population(s) and/or extent of the State/habitat affected (magnitude) 5- >50% of the State/population impacted 4- 25-50% of the State/population impacted 3- 10-25% of the State/population impacted 2- 5-10% of the State/population impacted 1- <5% of the State/population impacted		
	Total	
Assessment of uncertainties in this assessment (H,M,L) and brief description		
Potential for additional data to result in a significant future change in this risk estimate (H, M, L) and brief description. (Data Gaps; highlight significant data needs)		
Potential for future changes in the underlying risk from this stressor (+++, ++, +, 0, –, =, ≡; where + is improvement), and brief description.		
Potential for catastrophic impacts (H,M,L) and brief description		
Link to other Work Groups (e.g., socioeconomic impacts)		
Extent to which threat is currently regulated or otherwise managed		
Barriers to restoration		
Relative Contributions of Sources to Risk (H,M,L); include any information/details on sources		
NJ Primary Sources		
Large business/industry		
Small business industry		
Transportation		
Residential		
Agriculture		
Recreation		
Resource extraction		
Government		
Natural sources/processes		
Orphan contaminated sites		
Diffuse Sources		
Sediment sinks		

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Non-local air sources incl. deposition	
Biota sinks	

Summary Statement:

(This statement should include a brief description of the stressor, exposure pathway(s), populations/ecosystems exposed, effects/impacts, and reason for the score given).

Statewide Analysis of Threat   Threat =

Ecosystem	Severity Irreversibility	Frequency	Magnitude	Score
Inland Waters				
Marine Waters				
Wetlands				
Forests				
Grasslands				
			Total Score	
			Average Score (Total ÷ 8)	

Risk by Watershed Management Region

THREAT =	ECOSYSTEM							
Watershed Management Region	Inland Waters	Marine Waters	Wetlands	Forests	Grasslands	Agro-ecosystems	Recreational Ecosystems	Urban
Upper Delaware		NA						
Passaic								
Raritan								
Atlantic								
Lower Delaware								
Region/Watershed (secondary)								
Urban								
Suburban								
Rural								

H=high, M=medium, L=low, NA = not applicable

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potential impact from catastrophic (low probability) events (H,M,L) and brief description of likelihood	
extent to which risks are currently reduced through in-place regulations and controls	
Relative Contributions of Sources to Risk (H,M,L)	
Allocation of stressor-specific risk to primary NJ sources	
large business/industry	
small business industry	
transportation	
residential	
agriculture	
recreation	
resource extraction	
government	
natural sources	
contaminated sites	
diffuse and non-NJ sources	
sediment	
soil	
non-local air sources (including deposition)	
biota sinks	

Severity of specified health effects at current levels of exposure (H,M,L) (also 1-5 with 1 being least severe)	Size of population at significant risk for each health effect (H,M,L) (also 1-5 with 1 being smallest)	Are there discrete communities at elevated risk? (Y,N) (also 1-5 with 1 being the lowest probability that there are discrete communities at elevated risk)	Overall risk ranking (as a function of severity and population effected integrating across health effect) (H,M,L) (also 1-5 with 1 being the lowest overall risk)

APPENDIX II

Socioeconomic
Template

Author's Name
Socioeconomic Risk Assessment Framework

Date
Findings/Notes

Hazard Identification			
Stressor			
Description of stressor			
Ecological/Human Health Risks (including their relationship to socioeconomic impacts)			
Stressor-specific impacts considered (including direct socioeconomic impacts and those caused by ecological and human health risks):			
Key impacts selected (critical socioeconomic effects)			
Exposure Assessment			
Socioeconomic entities exposure routes and pathways considered			
Quantification of exposure levels statewide			
Specific socioeconomic entities at increased risk			
Quantification of exposure levels to entities at increased risk			
Dose/Impact-Response Assessment			
Quantitative/Qualitative impact-assessment employed			
Risk Characterization			

Risk estimate(s) by socioeconomic entities at risk			*Score*
Property Values	*a)*	Severity:	
	b)	Duration/irreversibility:	
	c)	Scale:	
	d)	Uncertainty:	
Employment	*a)*	Severity:	
	b)	Duration/irreversibility:	
	c)	Scale:	
	d)	Uncertainty:	
Costs Incurred	*a)*	Severity:	
	b)	Duration/irreversibility:	
	c)	Scale:	
	d)	Uncertainty:	
Aesthetic Levels	*a)*	Severity:	
	b)	Duration/irreversibility:	
	c)	Scale:	
	d)	Uncertainty:	
Psychological Impacts	*a)*	Severity:	
	b)	Duration/irreversibility:	
	c)	Scale:	
	d)	Uncertainty:	
Potential for additional data to result in a significant future change in this risk estimate (H, M, L) and brief description. (Data Gaps; highlight significant data needs)			

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Potential for future changes in the underlying risk from this stressor (+++, ++, +, 0, -, --, --- where + is improvement), and brief description	
Potential for catastrophic impacts (H,M,L) and brief description	
Incidence of impacts (affected sub-groups, variability, equity issues)	
Extent to which threat is currently regulated	
Relative Contributions of Sources to Risk (H,M,L); include any information/details on sources	
NJ Primary Sources	
Large business/industry	
Small business industry	
Transportation	
Residential	
Agriculture	
Recreation	
Resource extraction	
Government	
Natural sources/processes	
Orphan contaminated sites	
Diffuse Sources	
Sediment sinks	
Soil sinks	
Non-local air sources incl. Deposition	
Biota sinks	
References	
Current Policy and Regulatory Framework	
Federal	
State & Local	

Stressor Summary:

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Non-local air sources incl. deposition	
Biota sinks	

Summary Statement:

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Inland Waters				
Marine Waters				
Wetlands				
Forests				
Grasslands				
			Total Score	
			Average Score (Total ÷ 8)	

Risk by Watershed Management Region

THREAT =	ECOSYSTEM							
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